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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/639,684	08/15/00	RUNNOE	D 14374.14

ERIC L MASCHOFF
WORKMAN NYDEGGER & SEELEY
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY UT 84111

MM92/1017

EXAMINER

THOMAS, C

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 10/17/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/639,684

Applicant(s)

RUNNOE, DENNIS H.

Examiner

Courtney Thomas

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 23-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 23-27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. During a telephone conversation with Eric L. Mashcoff on Tuesday, October 9, 2001 a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-22. Applicant in replying to this Office action must make affirmation of this election. Claims 23-27 are withdrawn from further consideration by the examiner, 37 CFR §1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-7, 9, 11-13, 18 and 19 are rejected under 35 U.S.C. § 102 (b) as being anticipated by DeCou, Jr. et al. (U.S. Patent 5,264,801).
3. As per claim 1, DeCou, Jr. et al. disclose an x-ray device, comprising: (a) a vacuum enclosure (Fig. 1, #10; column 2 lines 58-59), (b) an integral cathode disposed in said vacuum enclosure (not shown; note: column 1, lines 14-15 and 17-19, column 2, lines 45-47) said integral cathode including an emitter (Fig. 10, #12, column 2, lines 59-60) capable of discharging electrons, said emitter shaping an electron beam by causing at least some discharged electrons to converge at a focal spot (see Fig. 1; column 2, lines 61-65); (c) a power source (not shown) connected to said emitter so that transmission of power from said power source to said emitter

causes said emitter to discharge electrons (column 2, lines 61-65); and (d) a target anode disposed in said vacuum enclosure and having a target surface positioned to receive said electron beam generated by said emitter (Fig. 1, #14).

4. As per claim 2, DeCou, Jr. et al. disclose an x-ray device wherein said focal spot is located proximate to said target surface of said target anode (i.e. Fig. 1).
5. As per claim 3, DeCou, Jr. et al. disclose an x-ray device further comprising a support cartridge, said support cartridge receiving said emitter and maintaining said emitter in a desired configuration (i.e. Fig. 1).
6. As per claim 5, DeCou, Jr. et al. disclose in an x-ray tube comprising a vacuum enclosure having disposed therein a target anode with a target surface, an integral cathode disposed in the vacuum enclosure and being spaced apart from the target surface of the target anode, the integral cathode comprising: (a) an emitter capable of discharging electrons (Fig. 10, #12), said emitter shaping an electron beam directed at the target surface of the target anode by causing at least some discharged electrons to converge at a focal spot (i.e. Fig. 1); and (b) a support cartridge, said support cartridge providing structural support for said emitter (see Fig. 1).
7. As per claims 6, 7, 9, 11-13, 18 and 19, DeCou, Jr. et al. disclose an apparatus that meet all the limitations of the aforementioned claims. Additionally, the limitations as cited by applicant are well known in the x-ray tube art (i.e. column 1, line 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. § 103 (a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4 and 19-22 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over DeCou, Jr. et al. (U.S. Patent 5,264,801) in view of Knudsen et al. (U.S. Patent 5,515,413).
10. As per claims 4 and 19-22, DeCou, Jr. et al do not explicitly disclose a support cartridge (that) facilitates substantial electrical isolation of said integral cathode. However, it would have been obvious to a practitioner in the art to provide a support for an integral cathode wherein the support (cartridge) was substantially electrically non conductive, since the purpose of a support is to provide structural integrity while not interfering with the electrical operability of the cathode. Additionally, the selection of suitable/ superior insulating materials (i.e. ceramics (alumina, zirconia, etc.) glass, etc. for use in an elevated temperature environment) is a well-known practice/ technique in the x-ray tube art (see also Knudsen et al. U.S. Patent 5,515,413).
11. Claims 8 and 14-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over DeCou, Jr. et al. (U.S. Patent 5,264,801) in view of Mobley (U.S. Patent 4,792,687).
12. As per claims 8 and 14-17, DeCou, Jr. et al., do not explicitly meet the limitations as cited in the aforementioned claims; however, Mobley teaches the shaping of an emitter to enhance the negative ion flux emanating from said emitter (see abstract, also column 3, lines 35-43; i.e. Fig. 13). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to devise a system as disclosed by DeCou, Jr. et al. (x-ray tube), further incorporating the teachings of Mobley (shaping of an emitter and subsequent beam) for the enhanced emission of charged particles to an area of interest. The shaping of the emitter as disclosed by Mobley, incorporated in the x-ray tube of DeCou, Jr. et al. would in effect, create an x-ray tube wherein the emission of electrons from the emitter, converge to a focal point (see Fig.

Fig. 13 – Mobley), thus presenting a possible solution to the problem of beam focusing (i.e. perveance, focal spot sizing, etc.) within the x-ray tube art. The combinations of the cited references would provide the necessary motivation for the aforementioned modification (to DeCou, Jr. et al.).

13. Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over DeCou, Jr. et al. (U.S. Patent 5,264,801).

14. As per claim 10, DeCou, Jr. et al do not explicitly disclose an emitter composed of a combination of tungsten and rhenium. However, it would have been obvious to one of ordinary skill in the art to devise an emitter, for generating an electron beam (or cloud), composed of substantially emissive material(s), since the purpose of such construction would be to ensure the thermionic emission of electrons from a source via the application of current. Additionally, the selection of suitable/ superior (emitter) materials is a well-known practice/ technique in the x-ray tube art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Courtney Thomas whose telephone number is (703) 306-0473. The examiner can normally be reached on M - F (9 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305 3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3594 for regular communications and (703) 305-3594 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Courtney Thomas

October 10, 2001


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800